CASE REPORT

Endoscopic Stenting of Colovaginal Fistula: the Transanal and Transvaginal "Kissing" Wire Technique

Maher A. Abbas, MD, Garietta N. Falls, MD

ABSTRACT

Interventional endoscopy is a rapidly evolving field allowing surgeons and endoscopists to approach surgical conditions nonoperatively. Stenting of benign colorectal disease has been limited due to technical issues and lack of long-term data. Colovaginal fistula can be a challenging condition to treat. In this report, we describe the technical aspect and results of endoscopic stenting of benign colovaginal fistula in 2 patients, using the combined transanal and transvaginal approach.

Key Words: Endoscopic stenting, Benign colovaginal fistula, Double wire technique.

INTRODUCTION

Interventional endoscopic techniques are continuously evolving and have enriched the therapeutic armamentarium of surgeons and endoscopists. Transluminal endoscopic decompression of malignant colonic obstruction with self-expanding stents has gained wide acceptance as an alternative to surgical diversion or excision, especially in the setting of metastatic disease or for patients who are poor surgical candidates.[1–9] Stenting of benign colorectal disease has been described, but its role has been limited due to technical issues and lack of long-term data on permanent metal stents for nonmalignant disease.[9–14] Furthermore, many surgical options and techniques are available to treat benign colorectal strictures and fistulae. However for patients with prior failed operative interventions, those with a hostile abdomen or pelvis, or both, those with significant medical comorbidities, or patients trying to avoid fecal diversion, endoluminal therapies may be an option.

In this report, we describe the technical aspect, challenges, and results of endoscopic stenting using the combined transanal and transvaginal approach in 2 patients with benign colovaginal fistula.

METHODS

Patient Selection

Patient 1

A 69-year-old woman presented with a persistent colovaginal fistula following 3 abdominopelvic operations. Four years before presentation, she underwent a sigmoid resection for colovaginal fistula secondary to chronic diverticulitis. She had a postoperative anastomotic leak with recurrence of the fistula. A diverting ileostomy was performed. The patient underwent 2 additional colorectal resections including a failed limited resection of her anastomosis with primary anastomosis and a subsequent low anterior resection. The fistula persisted, and the patient was referred to our service for further management.

Department of Surgery, Section of Colon and Rectal Surgery, Kaiser Permanente, Los Angeles, California USA (all authors).

Address reprint requests to: Maher A. Abbas, MD, FACS, FASCRS, Chief, Section Colon and Rectal Surgery, Education Chairman, Department of Surgery, Kaiser Permanente, 4760 Sunset Blvd, 3rd Floor, Los Angeles, CA 90027, USA. Telephone: 323 783 5442, Fax: 323 783 8747, E-mail: maher.a.abbas@kp.org

Patient 2

A 67-year-old woman with a history of cervical cancer presented with a symptomatic colovaginal fistula 23 years following hysterectomy and radiation therapy. Her medical comorbidities included congestive heart failure and chronic renal insufficiency.

Technique

The procedure was performed in the endoscopy suite under both endoscopic and fluoroscopic guidance. The patient was placed in the left lateral decubitus position. The preprocedural barium enema was reviewed to assess the location of the fistula, the length and diameter of the stricture, and the anatomic course of the colon including angulation and redundancy **(Figure 1)**. The endoscopic examination was initiated with the adult flexible sigmoidoscope, and an adult upper gastroscope was used later during the procedure. Once intravenous sedation was adequate, the vagina was intubated and the endoscope was advanced to its apex, the usual location of the fistula **(Figure 2)**. The fistulous opening in the vagina was identified and cannulated with a flexible guidewire (Hydra Jagwire, Boston Scientific, Natick, Maryland). A biliary and angiographic catheter were also used to provide the soft wire with more support, and in patient 2, a stiffer wire (Amplatz Super Stiff, Boston Scientific, Natick, Maryland) was used to traverse the fibrotic, radiated pelvis. Once the vaginal wire crossed the fistula, it was advanced into the colonic lumen proximal to the area of the stricture and fistula **(Figure 3A)**. The endoscope was withdrawn out of the vagina keeping the vaginal wire in place, and it was reinserted transanally and advanced to the area of the stricture **(Figure 3B)**. Reaching the stricture and fistula was difficult, and this portion of the procedure was challenging in patient 2 due to the angulation and redundancy of colon and rigidity of the pelvis. The upper gastroscope was used with a glidewire (Boston Scientific, Natick, Maryland) to traverse the colonic stricture in patient 2 and then exchanged for the Amplatz Super Stiff through an angiographic catheter. In both patients, the colonic wire was advanced across the stricture and fistula under fluoroscopic guidance. The intersection ("kissing") of both colonic and vaginal wires pinpointed the exact location of the colovaginal fistula **(Figure 3C)**. The endoscope was withdrawn with both wires in place. The delivery device of a 16 French covered Ultraflex stent (12 cm long, 18 mm x 23 mm diameter) (Boston Scientific Corporation, Natick, Maryland) was advanced over the colonic wire under fluoroscopic and endoscopic guidance after reintroducing the endoscope transanally **(Figure 4)**. The stent length was enough to provide at least 2 cm of coverage proximal and distal to the stricture. In patient 1, the stent was centered over the fistula before deployment, and the position was confirmed by verifying the radiopaque markers of the delivery device. The vaginal wire was then withdrawn, and the stent was deployed under both endoscopic and fluoroscopic guidance while the delivery device was held steady to avoid malpositioning. The delivery device and colonic wire were then retrieved, and the stented lumen was visualized endoscopically **(Figure 5)**. Although we were able to traverse and pinpoint the exact location of the fistula in patient 2, we were unable to advance the stent delivery device past the stricture. The rigidity of the patient's previously operated and radiated

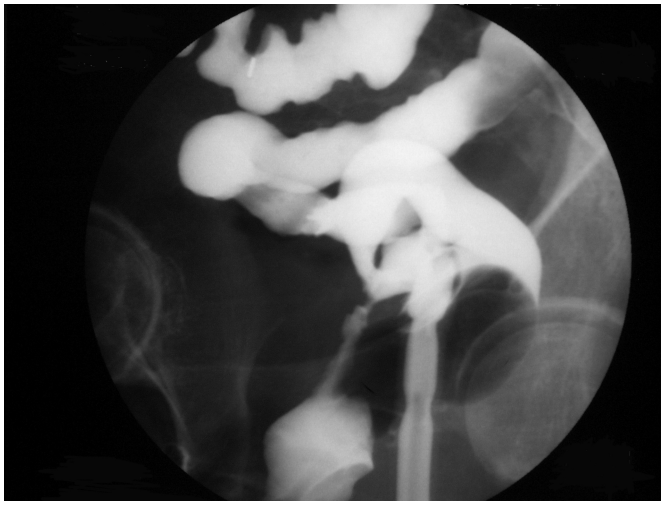

Figure 1. Barium enema demonstrates colovaginal fistula.

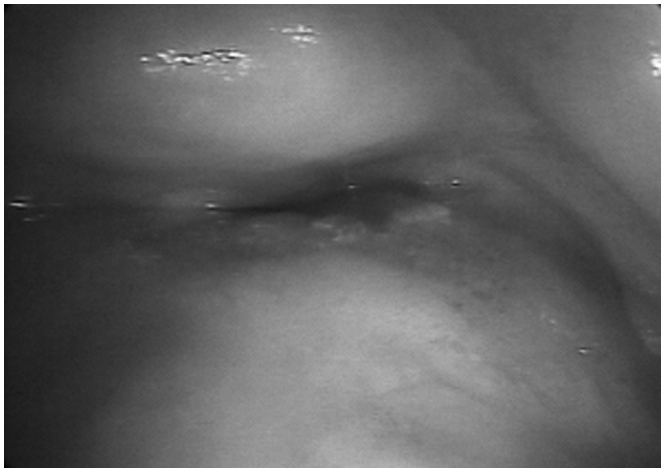

Figure 2. Transvaginal view of fistula.

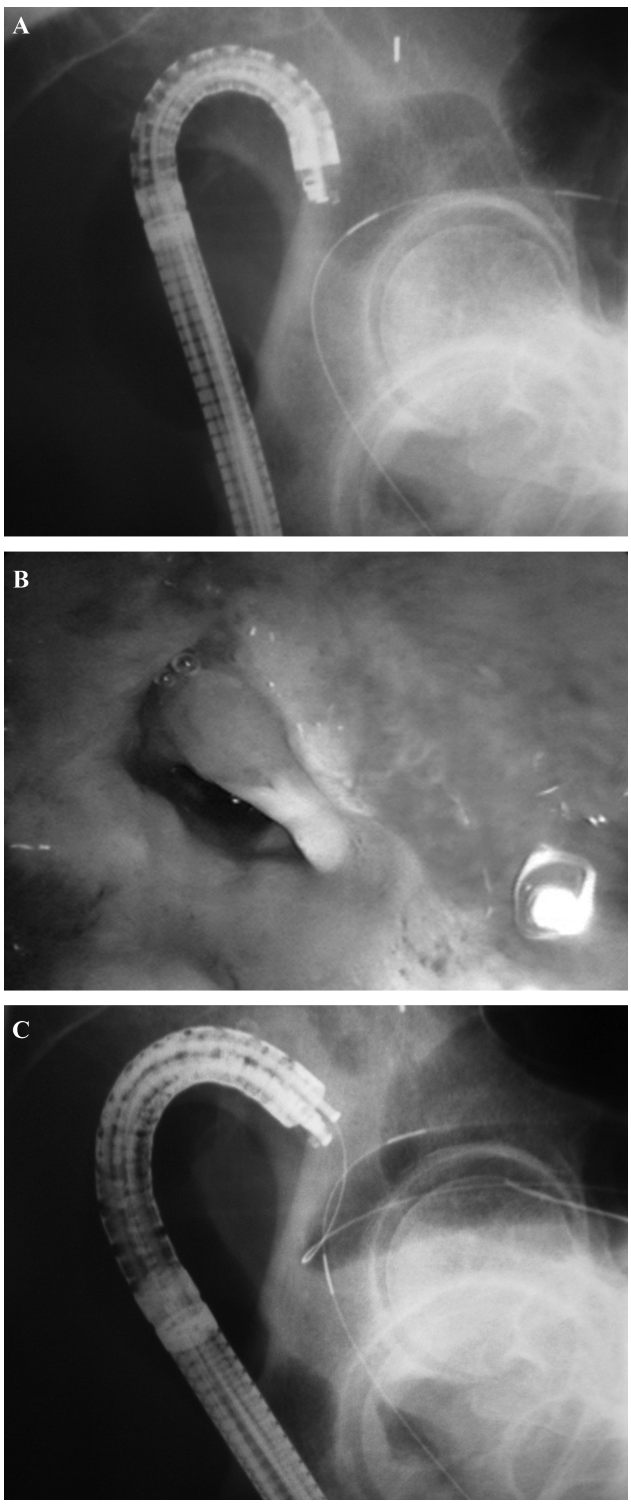

Figure 3. A: Fluoroscopic view of vaginal wire. The endoscope has been reinserted transanally. B: Endoscopic view of colorectal stricture. C: Transanal placement of second guidewire. Intersection point delineates exact fistula location.

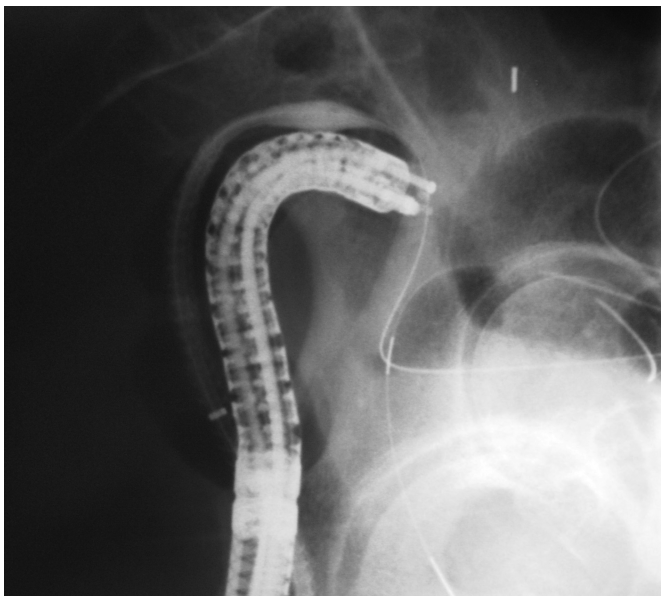

Figure 4. Endoscopic and fluoroscopic guidance of stent delivery device over colonic guidewire.

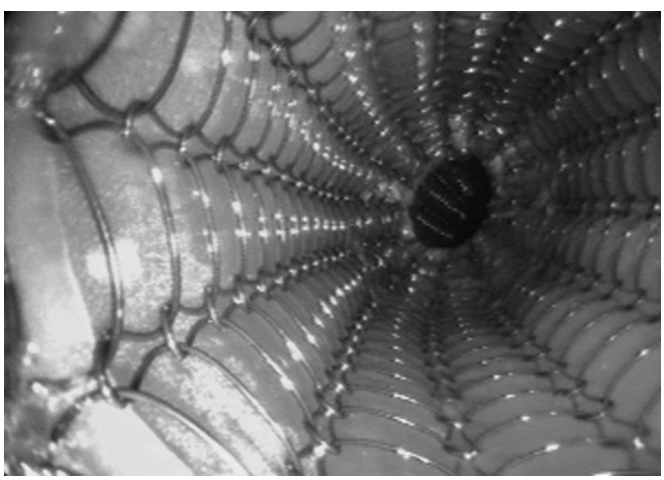

Figure 5. Immediate endoscopic view of stented lumen.

pelvis would not allow the softer delivery device to advance into the colon proximal to the stricture. Because we could not fully span the stricture with a proximal margin of normal colon, we elected not to deploy the stent to avoid the high risk of migration.

RESULTS

Patient 1 was discharged from the hospital on postoperative day 1. Repeat endoscopy at 1 month revealed incorporation of her stent **(Figure 6)**. Two months following her successful stenting, she underwent ileostomy closure.

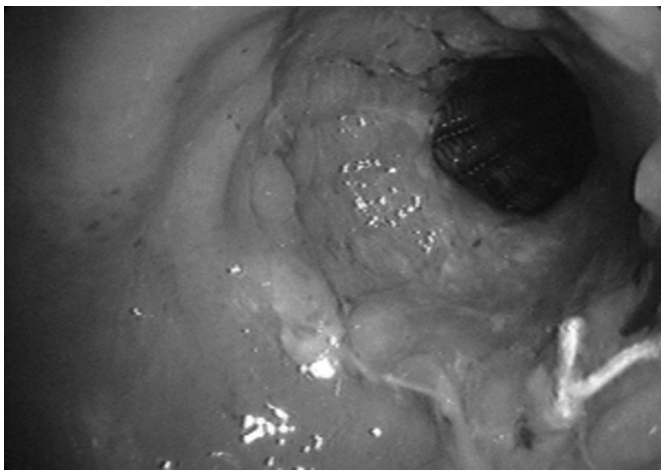

Figure 6. Fully deployed colonic stent at 1 month.

She remains asymptomatic from her colovaginal fistula 3 years after her endoscopic stenting. Routine surveillance of her stent is undertaken every 6 months and currently demonstrates a patent and functioning stent.

Patient 2 underwent subsequent anterior resection with a temporary diverting ileostomy and had subsequent closure of her ileostomy. She had full healing without evidence of recurrent fistula.

DISCUSSION

Colovaginal fistula is a distressing condition. Causal factors include diverticular disease, iatrogenic injury, inflammatory bowel disease, carcinoma, trauma, and radiation. Several surgical options are available to treat this condition including resection with primary anastomosis, resection with diversion, or diversion alone. Most patients will benefit from operative intervention. However, a select minority of patients may not be good operative candidates, because of significant medical comorbidities, a hostile surgical field such as the frozen abdomen and pelvis, or those with prior failed operations to treat the fistula. Furthermore, some patients are reluctant to undergo surgical intervention because of the risk of permanent stoma. For this subgroup of patients, endoscopic endoluminal stenting is an alternative option. A covered stent can effectively palliate the symptoms of the fistula by secluding the vagina from the colon.[13,14]

Stenting for benign colorectal disorders has not been widely practiced. In 2004, Suzuki and colleagues[6] summarized the outcome of 6 patients they treated and reviewed an additional 20 cases reported in the literature up to that date. At our institution, we have successfully treated patients with benign colorectal strictures secondary to anastomotic leak or radiation. This report summarizes the outcome in 2 patients with colovaginal fistula. Stenting benign colorectal strictures can be technically challenging due to associated fibrosis and inflammation secondary to the primary condition (ie, radiation, diverticulitis, Crohn's disease), scarring from failed operative intervention (ie, anastomotic leak), and sharp colonic angulation that prohibits adequate visualization and hinders safe advancement of the endoscope. In addition, colovaginal fistula poses some unique challenges. In many patients, the fistula is associated with a stricture and often the narrowed lumen can only be traversed with a wire under fluoroscopic guidance. Under such circumstances, it is difficult to assess the exact location of the fistula within the stricture because of lack of direct endoscopic visualization. Accurate localization of the fistula is crucial for the proper positioning and deployment of the covered stent. The "kissing" wire technique we describe in this report localizes the fistula from both the colonic and vaginal sides and allows for precise positioning of the stent to adequately cover the fistulous tract. We were able to successfully demonstrate this technique in both of our patients. However in our second patient, we were unable to deploy the stent because of inadequate positioning of the stent across the stricture and a proximal margin of normal colon.

CONCLUSIONS

In the past, malignant colorectal obstruction was the only accepted indication for endoscopic colonic stenting. However, as our endoscopic expertise as surgeons continues to grow so will the spectrum of indications for stenting. Surgical treatment of colovaginal fistula can be challenging, and a minority of patients may be suitable for endoscopic treatment. Future technological advances will provide us with a larger inventory of tools that will broaden the conditions we treat with minimally invasive approaches like transluminal interventions. We hope that our illustrated technique will be a useful addition to the armamentarium of the endoscopist surgeon treating this condition.

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